BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-034684
(43)Date of publication of application : 09.02.1999

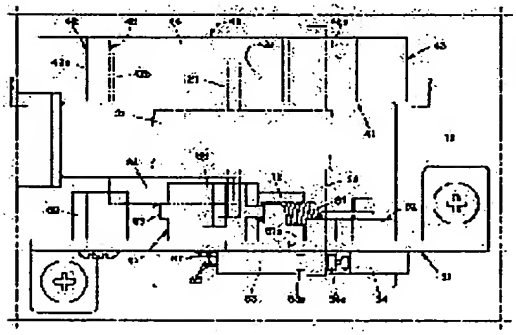
(51)Int.CI. B60K 20/02
F16H 59/02
F16H 59/08

(21)Application number : 09-209838
(22)Date of filing : 17.07.1997

(71)Applicant : MAZDA MOTOR CORP
DELTA KOGYO CO LTD
(72)Inventor : MIYOSHI KEISUKE
NISHIZUMI HIROKAZU
HIASA FUMIHIKO

(54) SHIFT OPERATION INPUT APPARATUS OF AUTOMATIC TRANSMISSION

(57)Abstract:
PROBLEM TO BE SOLVED: To receive an impact of swinging operation of a shift lever in a manual shift mode by a guide plate which restricts inter-range operation cooperatively with a shift pin, improve the durability of the guide plate, and prevent damage of the guide plate.
SOLUTION: A guide plate 41 and a supporting plate 51 are installed on both sides of a shift lever. A shift up switch 53 and a shift down switch 54 to detect the swinging movement of the shift lever in a shift mode and transmit a shift signal are installed in the supporting plate 51. Grooves 46c, 51a with which shift pins 30 moving longitudinally in the manual shift mode are formed in the guide plate 41 and the supporting plate 51 and the impact force of the swinging operation of the shift lever in the longitudinal direction in the manual shift mode can dispersedly be received by receiving both ends parts of the shift pin by the grooves 46c, 51a in both sides and consequently, the durability of the guide plate 41 is improved.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

CLAIMS

[Claim(s)]

[Claim 1] The 1st gear change mode which changes gears automatically based on the gear change property beforehand set up according to operational status, It is the gear change actuation input unit of the automatic transmission which has the 2nd gear change mode which changes gears according to an operator's manual operation. When a shift lever is operated in the splash location where the gear change mode of the above 2nd is attained and is rocked by the car-body cross direction in this splash location While having a gear change signal generation means to detect the splash through the splash of the pin member with which this lever was equipped, and to generate a gear change signal, and the support means which is prepared in car-body flank material and supports the above-mentioned gear change signal generation means The gear change actuation input unit of the automatic transmission characterized by preparing the contact section which regulates the splash of the car-body cross direction of this lever in a position to the above-mentioned support means in contact with the above-mentioned pin member, respectively at the time of a splash in the above-mentioned 2nd mode achievement location of a shift lever.

[Claim 2] The gear change actuation input unit of the automatic transmission according to claim 1 characterized by to prepare the 2nd contact section which it has the guide plate which

collaborates with a pin member in car-body flank material, and regulates actuation between the splash locations of the plurality of a shift lever, and regulates the splash of the car-body cross direction of this lever in a position also to this guide plate in contact with a pin member, respectively at the time of a splash in the 2nd mode achievement location of a shift lever.
[Claim 3] A pin member has the 1st and 2nd shift pin which can be mutually displaced relatively. The 1st path in which the 2nd shift pin is located when the 1st and 2nd gate which engages with each of these shift pins, respectively is established in a guide plate and a shift lever has the 2nd gate in splash locations other than the 2nd mode achievement location, The 2nd path located when a shift lever is in the 2nd mode achievement location, It has the free passage way through which it passes when these 1st and 2nd path is opened for free passage and a shift lever is operated between the 2nd mode achievement location, and 2nd mode a non-attaining location. The pin member which contacts the contact section of a support means and the 2nd contact section of a guide plate is the gear change actuation input unit of the automatic transmission according to claim 2 characterized by being the 2nd path [in / in the above-mentioned 2nd contact section / the 2nd gate of the above] order edge while being the above-mentioned 2nd shift pin.
[Claim 4] The gear change actuation input unit of the automatic transmission according to claim 2 which it has a 2nd mode detection means to detect that a shift lever is in the 2nd mode achievement location, and is characterized by this 2nd mode detection means being supported by the support means.
[Claim 5] It is the gear change actuation input unit of the automatic transmission according to claim 2 which a support means is the member which consisted of this resin with the metal of high intensity while the guide plate is constituted by resin shaping, and is characterized by constituting the pin member so that a guide plate may be previously contacted at the time of a splash in the 2nd mode achievement location of a shift lever.
[Claim 6] The gear change actuation input unit of the automatic transmission according to claim 1 to 5 characterized by preparing independently mutually the 1st mode achievement location where the 1st gear change mode is attained, and the 2nd mode achievement location where the 2nd gear change mode is attained.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the gear change actuation input unit of the

automatic transmission which has the manual mode which switches a gear ratio by carrying out splash actuation of the shift lever other than an automatic transmission and the auto mode which switches a gear ratio automatically especially based on the gear change property set up beforehand at a cross direction.

[0002]

[Description of the Prior Art] In recent years besides the auto mode (it is also called "D mode" or "the 1st gear change mode".) which switches a gear ratio automatically as an automatic transmission for cars based on the gear change property set up beforehand Manual mode which switches a gear ratio by carrying out splash actuation of the shift lever at a cross direction (it is also called "M mode" or "the 2nd gear change mode".) What it had is being put in practical use and there are some which were indicated by JP,4-244655,A as such an automatic transmission.

[0003] In this automatic transmission in the 1st [of a car-body cross direction] shift gate by splash actuation of a shift lever While P (parking), R (retreat), N (neutrality), D (drive), and the range of 3 (3rd speed), 2 (2nd speed), and 1 (1st speed) are selectable The 2nd shift gate parallel to the shift gate of the above 1st as an object for M range where M mode is attained through the gate which extends in a longitudinal direction is prepared from the D range by which the above-mentioned D mode is attained. And while a shift lever is energized by the center valve position in this 2nd shift gate, if it is operated from this center valve position to the front, a gear ratio will carry out an one-step shift up, and when it is operated back, it is constituted so that a gear ratio may carry out an one-step down shift.

[0004] by the way, when the 2nd shift gate for M range is made to arrange in parallel beside the 1st shift gate for the usual range selection, while the active region of the whole shift gate configuration thru/or the cross direction of a shift lever becomes large as mentioned above, in connection with this, a dimension becomes large in a longitudinal direction also as the whole gear change manual operating device. Therefore, by such juxtaposition type, trouble will be caused to the installation to a car body, or the layout between peripheral devices will be made difficult.

[0005] When these people make the end of the train of each range on a par with a car-body cross direction adjoin behind D range, and have arranged M range to this problem and a shift lever is operated to the edge concerned of this train, while M range is chosen It has already applied about invention whose gear ratio includes a shift up or the technique considered as a serial configuration so that a down shift may be carried out by actuation of the cross direction of the shift lever in this M range (Japanese Patent Application No. No. 280019 [eight to]). According to this, a shift lever is moving to a cross direction in the shape of a straight line, the active region of the cross direction of this shift lever becomes narrow, and dimension amplification of the longitudinal direction of a gear change manual operating device will be controlled in connection with this.

[0006]

[Problem(s) to be Solved by the Invention] By the way, in invention indicated to the above-mentioned application, the guide plate which collaborates with the shift pin with which the shift lever was equipped, and regulates the actuation between range of this lever is prepared in the base member by the side of a car body, and the shift up switch and the down-shift switch which output a manual gear change signal to this guide plate according to splash actuation of the shift lever in M mode, i.e., manual gear change actuation, respectively are attached. Moreover, a buttress plate is prepared in the above-mentioned base member,

and M range switch which detects what the shift lever was operated for by M range apart from the above-mentioned shift up switch or the down-shift switch is supported by this buttress plate.

[0007] and when a shift lever is operated by M range and rocked by the cross direction within this M range, it is constituted so that the above-mentioned shift pin with which this lever was equipped may carry out ON actuation of a shift up switch and the down-shift switch through a splash member, respectively.

[0008] In that case, it responds to the impact of splash actuation of the cross direction of the shift lever in M mode, and although it is needed in the structure where of the shift up location and the above-mentioned shift pin by which the above-mentioned shift pin carries out ON actuation of the shift up switch for this lever make the down-shift location carry out ON actuation suspend a down-shift switch, respectively, in invention indicated to the above-mentioned application, it constitutes so that the impact of manual gear change actuation of the shift lever may catch at a guide plate through the above-mentioned splash member.

[0009] Consequently, it becomes [the endurance of this guide plate that it had in order for a guide plate to be frequently joined by big impulse force at the time of manual gear change and to regulate the actuation between range of a shift lever primarily falls, or] easy to damage and is not desirable.

[0010] Then, this invention copes with the above actual condition in the automatic transmission which has M mode, and protects a guide plate from the impact of splash actuation of the shift lever at the time of the manual gear change by this M mode effectively, and, thereby, the endurance of this guide plate offers a technical problem the gear change actuation input unit of the automatic transmission which can prevent falling or damaging.

[0011]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the following means are used in this invention.

[0012] First, invention (henceforth "the 1st invention") indicated to claim 1 of the claim of this application The 1st gear change mode which changes gears automatically based on the gear change property beforehand set up according to operational status, It is the gear change actuation input unit of the automatic transmission which has the 2nd gear change mode which changes gears according to an operator's manual operation. When a shift lever is operated in the splash location where the gear change mode of the above 2nd is attained and is rocked by the car-body cross direction in this splash location While having a gear change signal generation means to detect the splash through the splash of the pin member with which this lever was equipped, and to generate a gear change signal, and the support means which is prepared in car-body flank material and supports the above-mentioned gear change signal generation means It is characterized by preparing the contact section which regulates the splash of the car-body cross direction of this lever in a position to the above-mentioned support means in contact with the above-mentioned pin member, respectively at the time of a splash in the above-mentioned 2nd mode achievement location of a shift lever.

[0013] Moreover, invention (henceforth "the 2nd invention") indicated to claim 2 It has the guide plate which collaborates with a pin member in car-body flank material, and regulates actuation between the splash locations of the plurality of a shift lever in the 1st invention of the above. It is characterized by preparing the 2nd contact section which regulates the splash of the car-body cross direction of this lever in a position also to this guide plate in contact

with a pin member, respectively at the time of a splash in the 2nd mode achievement location of a shift lever.

[0014] Furthermore, invention (henceforth "the 3rd invention") indicated to claim 3 In the 2nd invention of the above, a pin member has the 1st and 2nd shift pin which can be mutually displaced relatively. The 1st path in which the 2nd shift pin is located when the 1st and 2nd gate which engages with each of these shift pins, respectively is established in a guide plate and a shift lever has the 2nd gate in splash locations other than the 2nd mode achievement location, The 2nd path located when a shift lever is in the 2nd mode achievement location, It has the free passage way through which it passes when these 1st and 2nd path is opened for free passage and a shift lever is operated between the 2nd mode achievement location, and 2nd mode a non-attaining location. While the above-mentioned 2nd shift pin is the pin member which contacts the contact section of a support means, and the 2nd contact section of a guide plate, the above-mentioned 2nd contact section is characterized by being the 2nd path order edge in the 2nd gate of the above.

[0015] On the other hand, in the 2nd invention of the above, it has a 2nd mode detection means to detect that a shift lever is in the 2nd mode achievement location, and invention (henceforth "the 4th invention") indicated to claim 4 is characterized by supporting this 2nd mode detection means at a support means.

[0016] Moreover, in the 2nd invention of the above, a support means is the member which consisted of this resin with the metal of high intensity, and invention (henceforth "the 5th invention") indicated to claim 5 is characterized by constituting the pin member so that a guide plate may be previously contacted at the time of a splash in the 2nd mode achievement location of a shift lever, while the guide plate is constituted by resin shaping.

[0017] And invention (henceforth "the 6th invention") indicated to claim 6 is characterized by preparing independently mutually the 1st mode achievement location where the 1st gear change mode is attained, and the 2nd mode achievement location where the 2nd gear change mode is attained in either the 1st invention of the above thru/or the 5th invention.

[0018] By using the above-mentioned means, this application each invention acts as follows, respectively.

[0019] First, when a shift lever is rocked by the car-body cross direction in the splash location where M mode is attained according to the 1st invention, the splash is detected by the gear change signal generation means through the splash of the pin member with which this lever was equipped, a gear change signal is outputted according to the detection result, and manual gear change of M mode is realized.

[0020] In that case, while the above-mentioned gear change signal generation means is supported by the support means prepared in car-body flank material Since the contact section which the above-mentioned pin member is contacted [section] and makes this support means stop a shift lever, respectively in an above-mentioned shift up location and an above-mentioned down-shift location is prepared Even if it has the guide plate which collaborates with the above-mentioned pin member and regulates actuation between the splash locations of the plurality of a shift lever, to this guide plate The impact when responding to the splash of the shift lever at the time of the above-mentioned manual gear change actuation will not be added, but maintenance of the endurance of this guide plate and breakage prevention will be achieved by this.

[0021] Moreover, since the contact section which responds to the splash of the shift lever at the time of manual gear change actuation using the support means which supports the

above-mentioned gear change signal generation means was prepared, it does not have a new member for preparing this contact section, and buildup of components mark can be controlled.
[0022] Furthermore, since it constituted so that a gear change signal generation means might be supported to a support means and the subassembly of the gear change signal generation means is previously carried out to this support means, by attaching this support means in car-body flank material, a gear change signal generation means can be attached to car-body flank material, and assembly increases the efficiency.
[0023] And when it has the guide plate separately especially according to the 2nd invention, the above-mentioned pin member is contacted at this guide plate as well as the contact section of the above-mentioned support means. Since the 2nd contact section which makes a shift up location and a down-shift location stop a shift lever, respectively is prepared, while the splash regulation in the shift up location and down-shift location of a shift lever becomes more certain The impact of manual gear change actuation of a shift lever will be distributed by these two contact sections, the impulse force which acts on a guide plate can weaken by this, and protection of this guide plate will be achieved.
[0024] According to the 3rd invention, especially furthermore, to a shift lever The 1st guide pin and 2nd guide pin which can be mutually displaced relatively are prepared. To a guide plate The 1st gate and 2nd gate which engage with each of these guide pins, respectively are prepared. When it has 2 sets of shift actuation devices, the configuration of the 2nd gate where the 2nd guide pin of these is engaged is materialized. Since the 2nd path order edge in which the 2nd guide pin is located is made into the 2nd contact section of a guide plate when a shift lever is in an M mode achievement location at this 2nd gate, this 2nd guide pin, A shift lever will be stopped by contact at the 2nd path order edge in the 2nd gate in a shift up location and a down-shift location.
[0025] On the other hand, since a 2nd mode detection means to detect that a shift lever is in the 2nd mode achievement location especially as well as the above-mentioned gear change signal generation means is supported by the support means according to the 4th invention, this support means is utilized further by this, and buildup of components mark is controlled. Moreover, since the subassembly of this 2nd mode detection means can be first carried out to a support means, the increase in efficiency of assembly is also attained.
[0026] Moreover, according to the 5th invention, especially, a guide plate is constituted by resin shaping, and since it constituted so that a pin member might contact a guide plate ahead of a support means when a support means was the member which consisted of this resin with the metal of high intensity, a loud impulsive sound by the contact to a pin member and a metal support means is avoided.
[0027] And according to the 6th invention, since D mode achievement location and the M mode achievement location are prepared especially mutually independently, in the gear change actuation input unit of the automatic transmission with which additional arrangement of the M range was carried out in addition to D range, the same operation effectiveness as the 1st above-mentioned invention thru/or the 5th invention will be acquired.
[0028]
[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained.
[0029] Similarly the side elevation of the gear change actuation input device 1 which drawing 1 requires for the gestalt of this operation, and drawing 2 are top views, the gear change actuation input device 1 concerned has covering 2, and the upper part of a shift lever 3 projects from long and slender opening 2a in the cross direction prepared in this covering 2.

[0030] This shift lever 3 is operated by the cross direction along with opening 2a of the above-mentioned covering 2, and P range, R range, N range, the D range by which D mode in which automatic gear change is performed is attained, and M range in which the M mode to which manual gear change is performed is attained are chosen from the front by that actuated valve position. Moreover, the shift up location and the down-shift location are established in the actuated valve position of M range arranged at the method of the last of this range train forward and backward, respectively centering on the center valve position of the shift lever 3 at the time of the manual gear change actuation in M mode. And while the display board 4 in which these actuated valve positions are shown is formed in the side of opening 2a in the above-mentioned covering 2, this opening 2a is closed by the slide plate 5 which engages with a shift lever 3 and is slid forward and backward according to actuation of this lever 3. Furthermore, deregulation carbon button 3d for this shift lever 3 to cancel the regulation on shift actuation to control unit 3c of an upper bed by covering the upper part by coat member 3b from that pars intermedia while the body is constituted by pipe member 3a is prepared.
[0031] and when a shift lever 3 is operated from other range to D range, D mode is attained, and while a gear ratio is switched based on the gear change property set up beforehand, a gear ratio is manually switched by operating a shift lever 3 in M range of the method of the last, and carrying out splash actuation a core [a center valve position] within this M range in the shift up location or down-shift location of order.
[0032] Next, when the structure of the part caudad arranged from the above-mentioned covering 2 of the gear change actuation input device 1 is explained, this equipment 1 is fabricated with synthetic resin, and it has the base member 10 attached in a car body with the bolt (not shown) inserted in four boltholes 11....11 approximately.
[0033] While the hollow box-like lobe 12 which projects below is formed in the center section of this base member 10 and Holes 12a and 12a are formed in the right-and-left both-sides side of this lobe 12 In the soffit section of pipe member 3a which constitutes the above-mentioned shift lever 3 Pivot 3e which is prolonged in a longitudinal direction so that the shape of reverse of T characters may be made and which similarly becomes by the pipe member has fixed. Fitting of the right-and-left both ends of this pivot 3e is carried out to the holes 12a and 12a of the above-mentioned lobe 12, respectively, and the shift lever 3 is supported by this lobe 12 thru/or the base member 10 rockable forward and backward.
[0034] And on this base member 10, the actuation device of the shift up switch which detects the positioning device of a shift lever 3, the shift actuation regulation device which regulates actuation between each range of a shift lever 3, the actuation device of M mode switch in which it detects that M mode was chosen by the shift lever 3 and splash actuation of the shift lever 3 in M mode, i.e., a shift up, and down-shift actuation, and a down-shift switch etc. is arranged.
[0035] The above-mentioned positioning device consists of the positioning section 13 prepared in the base member 10, and a flat-spring member 14 attached in the shift lever 3. among these, that upper limb centers the positioning section 13 on the center of oscillation of the above-mentioned shift lever 3 while it is constituted by the wall of the cross direction set up in [this base member 10] one ahead of the lobe of the shift lever 3 in the top-face center section of the base member 10 -- it considers as a circular face mostly and each positioning crevice for the object for P range, the object for R range, the object for N range, the object for D ranges, and M range is formed in this circular face from the front. Moreover, while the back end section was fixed through the bracket 15 of the above-mentioned covering 2 in pipe

member 3a which constitutes the body of a shift lever 3 which fixed in the lower part location a little and the flat-spring member 14 is prolonged to the front It engages with the crevice corresponding to the range chosen by the shift-lever actuation of each crevice for range in the above-mentioned positioning section 13, the front end section being used as the engagement section by which ups-and-downs shaping was carried out, and, thereby, this shift lever 3 is positioned in each actuated valve position. 13m of in that case, crevices for M range of the method of the last -- the inside of this M range -- a shift lever 3 -- a cross direction -- a shift up and a down shift -- it is formed in the crevice a little long forward and backward so that it may be operational.

[0036] In addition, drawing 1 and drawing 2 show the condition that P range is chosen by the shift lever 3. moreover , although not illustrate to a shift lever 3 , the back end section of an actuation cable be connect through the above-mentioned bracket 15 , this cable be ahead prolong through the rod guide attached in the notch of the first transition section of the base member 10 , it be lead to an inhibitor switch , the manual bulb in a control valve unit or a parking device , etc. , and actuation of a shift lever 3 be transmit to these . Furthermore, if a brake pedal is not stepped on, the cable for the interlocking device in which it prevents from operating this shift lever 3 in a transit range from P range is also coordinated with the shift lever 3 through the rod guide attached in the notch of the first transition section of the base member 10.

[0037] On the other hand, the shift pin [which constitutes the actuation device of the above-mentioned shift actuation regulation device, the actuation device of M mode switch, a shift up switch, and a down-shift switch etc.] especially 1st, and 2nd two shift pin is prepared in the shift lever 3.

[0038] Next, drawing 1 and drawing 3 explain the installation structure of these shift pins. In addition, drawing 3 looks at a shift lever from the same side face as drawing 1 , and the left is the direction of the car-body front on a drawing. While the long slots 3f and 3f are formed in the right-and-left both-sides side up and down at the direct lower part of the fixing location of the above-mentioned bracket 15 in pipe member 3a which constitutes the body of a shift lever 3, respectively, the 1st shift pin 21 of a square shape is inserted in these slots 3f and 3f, and the both ends project on right-and-left both sides of pipe member 3a.

[0039] A center section is supported by the lower part of the supporter material 22 of the shape of a cylinder which this 1st shift pin 21 has been arranged in pipe member 3a, and was made movable up and down in the inside of this pipe member 3a. Within the limits of the above-mentioned slots 3f and 3f this supporter material 22 -- the upper and lower sides -- under the supporter material 22 in pipe member 3a, while it is movable The return spring 23 which energizes this supporter material 22 and the shift pin 21 up is arranged. By moreover, pushing actuation [in / the spring 24 which comes to wind a coil above this supporter material 22 densely is inserted in in pipe member 3a, and / control unit 3c of the upper bed of a shift lever 3] of deregulation carbon button 3d Through this spring 24, the above-mentioned supporter material 22 and the 1st shift pin 21 resist the energization force of the downward return spring 23, and are depressed below. In that case, if it crosses to pars intermedia from the upper part of the supporter material 22, the breakthrough 25 which penetrates this supporter material 22 to a cross direction is formed in the vertical direction by predetermined die length.

[0040] On the other hand, the bracket 26 of the shape of a plane-cross-section KO character which has a base is joined to the tooth back of pipe member 3a, and the 2nd cylinder-like

supporter material 27 is held free [vertical movement] in this bracket 26 like the supporter material 22 which supports the above-mentioned 1st shift pin 21. While being energized up with the return spring 28 which this 2nd supporter material 27 was supported on the above-mentioned base, and has been arranged caudad, the 2nd round shift pin 30 by which both ends project right and left through the 2nd slot 29 and 29 formed in the right-and-left both-sides side of a bracket 26 at that lower part for a long time than the above-mentioned 1st shift pin 21 is attached in one.

[0041] And it was attached in the front upper part of the 2nd supporter material 27 so that a spring pin 31 might project to the front, and the point of this pin 31 has rushed into the tooth back of pipe member 3a which holds the 1st supporter material 22 inside the breakthrough 25 of the above-mentioned 1st supporter material 22 through the free passage hole 32 formed in the vertical direction by predetermined die length.

[0042] Therefore, if deregulation carbon button 3d prepared in the upper bed section of the shift lever 3 concerned pushes in and is operated, the 1st supporter material 22 will resist the energization force of a return spring 23, and will be depressed caudad. If pushing actuation of the above-mentioned carbon button 3d is canceled by reverse, the 1st supporter material 22 will be pushed up up by the energization force of a return spring 23. Moreover, by this Although the 1st shift pin 21 will move up and down in accordance with the shaft orientations of the shift lever 3 concerned by within the limits which is the 1st slot 3f and 3f From the spring pin 31 of the 2nd supporter material 27 rushing into the breakthrough 25 of this 1st supporter material 22, and having an engagement relation in that case When the rising wood or the margo-inferior section of these spring pins 31 and breakthroughs 25 is in a contact condition While the 2nd supporter material 27 and the 2nd shift pin 30 become possible [the 1st supporter material 22 and the 1st shift pin 21 being interlocked with, and moving up and down in accordance with the shaft orientations of a shift lever 3 similarly] Since the above-mentioned breakthrough 25 has predetermined die length in the vertical direction, when these spring pins 31 and breakthroughs 25 will be in a contact condition The 2nd supporter material 27 and the 2nd shift pin 30 become possible [being mutually displaced relatively, without the 1st supporter material 22 and the 1st shift pin 21 being interlocked with].

[0043] In addition, in drawing 3 , a shift lever 3 is in P range, and a continuous line shows the condition that push-down actuation of the 1st supporter material 22 thru/or the 1st shift pin 21 is not performed, and a shift lever 3 is in M range, and although the chain line shows the condition that push-down actuation of the 1st supporter material 22 thru/or the 1st shift pin 21 is not performed, about this, it mentions later further.

[0044] Next, the shift actuation regulation device which regulates the actuation between range of this shift lever 3 is explained. As shown in drawing 4 and drawing 5 , toward the front of the range actuation path of a shift lever 3, the guide plate 41 set up by the base member 10 in one in accordance with this actuation path is arranged, and the shift actuation regulation device is constituted by the right-hand side side by this guide plate 41, and the above 1st and the 2nd shift pin 21 and 30 which were prepared in the shift lever 3.

[0045] In the field by the side of the shift lever 3 of this guide plate 41 1st regulation side 42a which regulates the actuation to back from P range location of a shift lever 3 from the front by engaging with the right side edge section of the above-mentioned 1st shift pin 21, 2nd regulation side 42b which similarly regulates the actuation to the front from R range location, with the side heavy-gage part 42, before having 3rd regulation side 42c which similarly regulates the actuation to the front from N range location, and the 42d of the 4th regulation

sides which determine the shift up location within this M range while regulating the actuation to the front from M range location similarly After having 5th regulation side 43a which determines the down-shift location within M range, the side heavy-gage part 43, While the upside heavy-gage part 45 which continues in the upper part is formed in the heavy-gage part 42 before and behind these, the thin-walled part 44 which intervenes among 43, the heavy-gage parts 42 and 43 of order, and mutual It is surrounded in the rising wood of these heavy-gage parts 42, 43, and 45 and a thin-walled part 44, and the penetration slot 46 which penetrates a guide plate 41 in the thickness direction is formed.

[0046] This penetration slot 46 consists of 1st radii slot 46a prolonged for a long time forward and backward, free passage slot 46b prolonged in the upper part from the back end section of this 1st radii slot 46a, and 2nd radii slot 46c short prolonged in order from the upper bed section of this free passage slot 46b. And the right side edge section of the round 2nd shift pin 30 with which the shift lever 3 was equipped is inserted in this penetration slot 46. The right side edge section of the 1st shift pin 21 of the square shape with which the shift lever 3 was similarly equipped is always caudad located rather than the above-mentioned 2nd shift pin 30 in the shaft orientations of this lever 3. The 1st - the 5th regulation sides 42a, 42b, 42c, 42d, and 43a which were established in the heavy-gage parts 42 and 43 before and behind the above The 1st gate which regulates the actuation between range of a shift lever 3 by one side in contact with the right side edge section of this 1st shift pin 21 is constituted. The upper above-mentioned penetration slot 46 constitutes the 2nd gate which, on the other side, regulates the actuation between range of a shift lever 3 (it mentions later specifically like actuation from M range to a D range side) in contact with the right side edge section of the 2nd shift pin 30 from this 1st gate.

[0047] In that case, as shown in drawing 5 , in 1st radii slot 46a of the 2nd gate where the 2nd shift pin 30 is engaged, the 2nd swelling section 46e jutted out a little over a front underside up is formed for the 46d of the 1st swelling sections caudad jutted out over the back end section top face again, respectively.

[0048] And when a shift lever 3 is operated by M range and pushing actuation of the above-mentioned carbon button 3d is canceled Although the 2nd shift pin 30 moves forward and backward in the inside of 2nd radii slot 46c when the 2nd shift pin 30 carries out upper part migration according to the energization force of a return spring 28 into 2nd radii slot 46c in the 2nd gate of the above and a shift lever 3 is rocked forward and backward within this M range About this actuation, it mentions later further.

[0049] Next, each switch actuation device of M mode switch, a shift up switch, and a down-shift switch is explained. As shown in drawing 4 and drawing 6 , the buttress plate 51 fixed to the base member 10 in accordance with the above-mentioned actuation path is arranged so that the left-hand side side may be countered with the above-mentioned guide plate 41 toward the front of the range actuation path of a shift lever 3.

[0050] In this buttress plate 51, in 2nd radii slot 46c of the 2nd gate in the above-mentioned guide plate 41, and a corresponding location When slot 51a is formed this 2nd radii slot 46c and in the shape of abbreviation isomorphism, and a shift lever 3 is operated by M range and pushing actuation of the above-mentioned carbon button 3d is canceled When the left side edge section of the 2nd shift pin 30 carries out upper part migration, and is engaged in this slot 51a and a shift lever 3 is rocked further forward and backward, it moves forward and backward in the inside of this slot 51a.

[0051] This slot 51a is surrounded. The M mode switch 52 above this slot 51a and to the field

by the side of the shift lever 3 of a buttress plate 51 The shift up switch 53 and the down-shift switch 54 the front and behind this slot 51a to the field by the side of the anti-shift lever 3 of a buttress plate 51 When it is attached so that those contact pieces 52a, 53a, and 54a may be located in the above-mentioned slot 51a, respectively, and the left side edge section of the 2nd shift pin 30 carries out upper part migration into this slot 51a When contact piece 52a of the M mode switch 52 is pressed by this pin 30, and an M mode signal is outputted and longitudinal slide movement is carried out in this condition within left side edge section fang furrow section 51a of the 2nd shift pin 30 The contact pieces 53a and 54a of the shift up switch 53 or the down-shift switch 54 are pressed by this pin 30, and an effective shift up signal or a down-shift signal is outputted.

[0052] Furthermore, in the gear change actuation input device 1 concerning this operation gestalt, when making it not make it rock back over a predetermined range when carrying out splash actuation of the shift lever 3 from P range of the method of the forefront in back, and carrying out splash actuation ahead from M range of the method of the last, ahead, it has the 2nd shift actuation regulation device it is made not to make rock over a predetermined range.

[0053] As shown in drawing 4 and drawing 6 , this 2nd shift actuation regulation device is arranged in the field by the side of the shift lever 3 of the above-mentioned buttress plate 51, and has the movable block object 62 back energized with the return spring 61 with which the back end section was stopped by this buttress plate 51. While the guide projection 63 which projects caudad is formed in the underside of this block object 62, between the buttress plate 51 and the shift lever 3, the back low high slope 64 is mostly formed ahead at the base member 10 in the range of the cross direction corresponding to the formation range of the before side heavy-gage part 42, and the underside by the side of a shift lever 3 is opposite-**(ing) on the top face of this slope 64 rather than the guide projection 63 in the above-mentioned movable block object 62.

[0054] Moreover, while the pins 65 and 65 which project in this plate 51 side are formed in the field by the side of the buttress plate 51 in the block object 62 up and down, to a buttress plate 51, the back low high long slots 66 and 66 are formed ahead, the above-mentioned pins 65 and 65 penetrate these long slots 66 and 66 like the above-mentioned slope 64, respectively, and that point is stopped with the push nuts 67 and 67. Therefore, as shown also in drawing 7 , this block object 62 can be slid on the above-mentioned slope 64 top forward and backward along this slope 64 and the long slots 66 and 66, while the above-mentioned pins 65 and 65 and the long slots 66 and 66 show around. In that case, the field by the side of the buttress plate 51 in this movable block object 62 and the field by the side of the shift lever 3 in this buttress plate 51 opposite-**, and the side face of the guide projection 63 in the block object 62 and the side face of a slope 64 opposite-**, and, thereby, the backlash of the longitudinal direction of this block object 62 is prevented.

[0055] Furthermore, while the engagement slot 68 of the configuration which crosses to the top face of this block object 62 thru/or the field by the side of a shift lever 3, carries out opening to the block object 62, and may engage with the left side edge section of the 1st shift pin 21 is formed It is arranged across the above-mentioned slope 64 forward and backward, and the stopper members 69 and 70 before and after regulating front migration of the above-mentioned block object 62 or the setback in a position, respectively are attached in the field by the side of the shift lever 3 in a buttress plate 51. In that case, when the above-mentioned block object 62 resists the energization force of a return spring 61 and has slid on the slope 64 top ahead, the stopper member 69 by the side of before So that the

above-mentioned engagement slot 68 of this block object 62 may stop in the location corresponding to the lower part of 3rd regulation side 42c in a guide plate 41 The front migration is forbidden in contact with this block object 62. The stopper member 70 on the backside When the above-mentioned block object 62 has slid on the slope 64 top back according to the energization force of a return spring 61 In contact with this block object 62, the setback is forbidden so that the above-mentioned engagement slot 68 of this block object 62 may stop in the location corresponding to the lower part of the mid-position with the 42d of the 4th regulation sides and 5th regulation side 43a in a guide plate 41. Moreover, when the block object 62 is in a back location in contact with the backside stopper member 70, the front face of this block object 62 is located a little in the location corresponding to the lower part of a front location from the 42d of the 4th regulation sides in a guide plate 41.

[0056] Next, an operation of this gear change actuation input unit 1 is explained.

[0057] First, about the 1st shift pin 21, while are pushing in deregulation carbon button 3d of a shift-lever 3 up edge and not operating it, it is energized by the Slots [3f and 3f] upper part. In this condition, since there is no regulation side between N range and D range in a guide plate 41, therefore migration of the 1st shift pin 21 is not regulated as shown in drawing 5 , a shift lever 3 can be operated freely, but when the 1st shift pin 21 contacts 3rd regulation side 42c from N range to R range, actuation of a shift lever 3 is regulated. Moreover, also when a shift lever 3 is in P range location, in contact with 1st regulation side 42a, the actuation to R range or D range is regulated for the 1st shift pin 21.

[0058] Moreover, where deregulation carbon button 3d is pushed in halfway, the 1st shift pin 21 is depressed to the mid-position, the actuation of it to R range is attained from N range, but in this condition, since the 1st shift pin 21 contacts 2nd regulation side 42b, the actuation to P range from R range is regulated. And if the above-mentioned carbon button 3d is pushed in further and the 1st shift pin 21 is moved to the Slots [3f and 3f] bottom, the actuation to P range from the above-mentioned R range and the actuation to back from P range will also become possible.

[0059] Next, a motion of the 2nd shift pin 30 is described. When a shift lever 3 is in P range and pushing actuation of the above-mentioned carbon button 3d is not performed, the 1st shift pin 21 is energized by the Slots [3f and 3f] upper part. At this time, as shown in drawing 3 , the physical relationship of the breakthrough 25 of the 1st supporter material 22 which supports the 1st shift pin 21, and the spring pin 31 of the 2nd supporter material 27 which supports the 2nd shift pin 30 will be in a contact condition, and the space of predetermined die length has produced it in the upper part of a spring pin 31, and a lower part. Therefore, the 2nd shift pin 30 could be displaced relatively to the 1st shift pin 21, and as shown in drawing 5 , it has stopped according to the energization force to the upper part of a return spring 28 in contact with the top face of 1st radii slot 46a in the 2nd gate (penetration slot) 46 of a guide plate 41.

[0060] On the other hand, the 1st shift pin 21 is moved by pushing actuation of deregulation carbon button 3d at the time of operating a shift lever 3 between P range and R range to the Slots [3f and 3f] bottom like arrow-head A. Therefore, when lower part migration also of the above-mentioned breakthrough 25 is carried out, the rising wood and the spring pin 31 of this breakthrough 25 contact, it interlocks, lower part migration is carried out by this like arrow-head I, and the 2nd shift pin 30 contacts the underside of the above-mentioned 1st radii slot 46a by it.

[0061] Therefore, it sets to R range which has the 1st shift pin 21 in the height location

between the method location of the lowest at the time of migration between these P-R range, and the maximum upper part location shown in drawing 3 , N range, and D range. Although the 1st shift pin 21 moves up and down to the shaft orientations of a shift lever 3 along the 1st gate while not contacting and operating a shift lever 3 by within the limits from P range to D range after all, the above-mentioned breakthrough 25 and a spring pin 31 The 2nd shift pin 30 becomes carrying out longitudinal slide movement, maintaining the condition of having contacted the top face of this radii slot 46a along with 1st radii slot 46a of the 2nd gate, except for the time of the above-mentioned migration between P-R range.

[0062] Next, the actuation between D-M range of a shift lever 3 is described.

[0063] First, since there is no regulation side in the above 1st and both the 2nd gate, therefore neither of migration of the 1st and 2nd shift pin 21 and 30 is regulated, the actuation to M range from the D range of a shift lever 3 is permitted even if it has not carried out pushing actuation of deregulation carbon button 3d. Therefore, in operability's not becoming complicated at **, for example, switching to manual gear change from automatic gear change while an operator runs, only actuation of a shift lever 3 is required and the change-over actuation to M mode will become easy.

[0064] And when a shift lever 3 is operated by M range, in order that the before [a guide plate 41] side heavy-gage part 42 may break off, the 1st shift pin 21 carries out upper part migration in the space formed between the 42d of the 4th regulation sides of the side heavy-gage part 42, and 5th regulation side 43a of the backside heavy-gage part 43, before countering mutually, as a continuous line shows to drawing 5 . At this time, the 1st shift pin 21 returns to the same maximum upper part location as the case in P range.

[0065] On the other hand, when it is located behind 1st radii slot 46a in D range and a shift lever 3 is further operated without the pushing actuation which is deregulation carbon button 3d by back M range, as a continuous line shows to drawing 5 , the 2nd shift pin 30 Upper part migration is carried out into upper short 2nd radii slot 46c through free passage slot 46b prolonged in the upper part from the back end section of the above-mentioned 1st radii slot 46a. At this time, as the chain line shows to drawing 3 , a spring pin 31 is displaced relatively up in the inside of the breakthrough 25 of the supporter material 22 which supports the 1st shift pin 21 which returned to the maximum upper part location, and the 2nd shift pin 30 stops in contact with the top face of 2nd radii slot 46c.

[0066] According to and the positioning device of the above-mentioned shift lever 3 which consists of the positioning section 13 prepared on the base member 10, and a flat-spring member 14 attached in the shift lever 3 As a continuous line shows to drawing 5 , respectively, the 1st shift pin 21 is located in the medium with the 42d of the 4th regulation sides, and 5th regulation side 43a, and the 2nd shift pin 30 is located in the medium of 2nd radii slot 46c. If this is made into the center valve position within M range of a shift lever 3 and a shift lever 3 is ahead rocked from this center valve position The 1st shift pin 21 contacts the 42d of the 4th regulation sides, and the 2nd shift pin 30 contacts the front end section of 2nd radii slot 46c. If a shift lever 3 is similarly back rocked from a center valve position while the actuation to the front of a shift lever 3 is regulated by this The 1st shift pin 21 contacts 5th regulation side 43a, and the 2nd shift pin 30 contacts the back end section of 2nd radii slot 46c. Actuation behind a shift lever 3 is regulated by this, and let these be the shift up location and down-shift location within M range of a shift lever 3.

[0067] Moreover, at this time, the left side edge section of the 2nd shift pin 30 carries out upper part migration into slot 51a formed in the buttress plate 51 the above-mentioned 2nd

radii slot 46c and in the shape of abbreviation isomorphism, the front end section of this slot 51a is contacted with the back end section of this slot 51a in a down-shift location in a shift up location, and the splash actuation before and behind a shift lever 3 is regulated by this. Therefore, since an impact of the longitudinal slide movement of a shift lever 3 is got in a guide plate 41 and a buttress plate 51 at the both ends of right and left of the 2nd shift pin 30, ****** of the 2nd shift pin 30 will be avoided, and the above-mentioned impulse force will be distributed, and the improvement in endurance thru/or breakage prevention of a guide plate 41 will be achieved.

[0068] And when the left side edge section of this 2nd shift pin 30 carries out upper part migration into slot 51a of the above-mentioned buttress plate 51, ON actuation of the M mode switch 52 is carried out, and the shift up switch 53 will be carried out in a shift up location, and ON actuation of the down-shift switch 54 will be carried out in a down-shift location, respectively, and manual gear change will be performed.

[0069] On the other hand, the actuation to D range from M range of a shift lever 3 If pushing actuation of deregulation carbon button 3d is not carried out, the 1st shift pin 21 will contact the 42d of the 4th regulation sides of the 1st gate. Although it will be necessary to carry out lower part migration of both these [1st] and both the 2nd shift pin 21 and 30, and to cancel the contact since the 2nd shift pin 30 contacts the front end section of 2nd radii slot 46c in the 2nd gate Lower part migration of both these shift pins 21 and 30 becomes possible by pushing actuation of the above-mentioned deregulation carbon button 3d. Namely, when the 2nd shift pin 30 carries out push-down actuation of the 1st shift pin 21 in M range in the condition of having been displaced relatively up to the 1st shift pin 21 Since a breakthrough 25 also carries out lower part migration and the rising wood of this breakthrough 25 presses caudad this pin 31 thru/or the 2nd shift pin 30 for it in contact with a spring pin 31 By pushing actuation of the above-mentioned carbon button 3d, both the 1st and 2nd shift pin 21 and 30 will interlock [both], and lower part migration will be carried out.

[0070] At thus, the time of the actuation to D range from M range of a shift lever 3 Since pushing actuation of deregulation carbon button 3d is the need, when performing manual gear change actuation within M range in the usual condition which does not push in this carbon button 3d, Especially, this lever 3 escapes from a shift lever 3 from M range at the time of the shift up actuation made to rock ahead, it comes out, and malfunction of being returned to the D range located ahead [the] is prevented certainly.

[0071] And if deregulation carbon button 3d is pushed in in M range and both the shift pins 21 and 30 are depressed Although contact in the 1st shift pin 21, the 42d of the 4th regulation sides, and the 2nd shift pin 30 and the front end section of 2nd radii slot 46c is avoided and the front actuation to the D range of a shift lever 3 is attained in that case, 2nd radii slot 46c the above-mentioned 2nd shift pin 30 carries out [c] longitudinal slide movement at the time of manual gear change -- the cross direction from the upper bed section of free passage slot 46b -- extending -- each of the shift up location and down-shift location, as shown in the lower part at drawing 5 Since the undersides 46f and 46g which form the 2nd radii slot 46c concerned have jutted out towards the center valve position, the 2nd shift pin 30 When it is in the above-mentioned shift up location or a down-shift location, even if the 1st shift pin 21 is interlocked with and it is depressed, in order to contact the 46f of the above-mentioned undersides, and 46g, only when lower part migration cannot be performed but a shift lever 3 is in a center valve position, lower part migration is attained through the above-mentioned free passage slot 46b.

[0072] Therefore, although it is required at the time of the actuation to D range from M range of a shift lever 3 to perform pushing actuation of deregulation carbon button 3d, and to carry out lower part migration of both the 1st and 2nd shift pin 21 and 30 both Only when the lower part migration thru/or pushing actuation of carbon button 3d also have the 2nd shift pin 30 in a center valve position That is, since it becomes possible only when a shift lever 3 is in a center valve position and shift up actuation or down-shift actuation is omitted Even if deregulation carbon button 3d push operation is accidentally carried out during activation of manual gear change actuation, it will not say that a shift lever 3 will escape from M range, and it will come out, and the operation mistake from M range to D range will be guarded by two steps as a result.

[0073] And it sets to the gear change actuation input unit 1 concerned in this way. The two gates, the 1st and the 2nd, which equip a shift lever 3 with two shift pins, the 1st and the 2nd, 21 and 30, and engage with each shift pins 21 and 30, respectively are established in a guide plate 41. In the group of the 1st shift pin 21 and the gate The change actuation between the range of a shift lever 3 is regulated chiefly. In the group of the 2nd shift pin 30 and the gate Since it constituted so that change actuation in the gear change mode between D mode and M mode might be regulated Respectively heterogeneous actuation will assign the group of the shift pin of dedication, and the gate, and will be performed to mutual [which is called actuation between these range, and actuation between the modes], and improvement in the precision of each actuation and dependability will be achieved by this.

[0074] By the way, when operating a shift lever 3 from M range to a D range side, it is necessary to carry out lower part migration of the 2nd shift pin 30 from 2nd radii slot 46c in the 2nd gate to 1st radii slot 46a, and the 1st shift pin 21 which interlocks mutually also carries out lower part migration only of this distance at this time. On the other hand, the block object 62 in the 2nd shift actuation regulation device In contact with the backside stopper member 70, it is in a back location on a slope 64 according to the energization force of a return spring 61. The mid-position with the 42d of the 4th regulation sides and 5th regulation side 43a, [in / in the engagement slot 68 / a guide plate 41] That is, when both the 1st and 2nd shift pin 21 and 30 was depressed, it was surely located, and it has stopped in the location corresponding to the lower part of the center valve position of M range which can push-down operate these shift pins 21 and 30. Consequently, the 1st shift pin 21 rushes in and fits in in the engagement slot 68 of the above-mentioned block object 62 by depression actuation at the time of actuation of the shift lever 3 from M range to D range, it is in this condition and migration actuation of the shift lever 3 will be ahead carried out from M range.

[0075] However, front migration of the block object 62 is regulated by the before side stopper member 69. Since the above-mentioned engagement slot 68 thru/or the 1st shift pin 21 are carried out to to the location corresponding to 3rd regulation side 42c, i.e., N range location, the location at that time Even if a shift lever 3 is ahead operated with sufficient vigor from M range and exceeds D range, as shown in drawing 7 , the operation mistake which this lever 3 is not operated by front R range from N range, consequently is said from an advance range under transit to a retreat range will be avoided.

[0076] furthermore, when the above-mentioned block object 62 is in a back location in contact with the backside stopper member 70 From the front face of this block object 62 being located a little from the 42d of the 4th regulation sides in a front location, i.e., a D range location For example, where were under parking and the shift lever 3 was in P range of the method of the forefront, and the operator was going to depart here, it pushed in deregulation

carbon button 3d and the 1st shift pin 21 is depressed Even if it operates this shift lever 3 with sufficient vigor back from P range In contact with the front face of the block object 62, the setback of a shift lever 3 is prevented for the depressed above-mentioned 1st shift pin 21 here. This lever 3 will not be further operated by back M range more than D range, consequently the usual automatic gear change mode will be first chosen and set up preferentially at the time of start.

[0077] Consequently, a shift lever 3 is stabilized and it is held at D range, and when an operator wishes D mode and makes this D range by this carry out the back splash of the shift lever 3 at a stretch from front P range, a shift lever 3 overruns a vigor complementary, this D range is exceeded, and the nonconformity of going into the M mode which an operator does not mean is canceled. In addition, the change to next M mode from here cancels push-down actuation of deregulation carbon button 3d, moves the 1st shift pin 21 up, and then should just carry out back actuation of the shift lever 3 anew.

[0078] Thus, the above-mentioned 2nd shift actuation regulation device has two functions, the function to make it not make even back M range operate it exceeding D range when carrying out back actuation of the shift lever 3 from P range, and the function to make it not make even front R range operate it over N range when carrying out front actuation of the shift lever 3 from M range.

[0079] And the buttress plate 51 with which these 2nd shift actuation regulation devices including the above-mentioned movable block object 62 support the M mode switch 52, the shift up switch 53, and the down-shift switch 54 is used. Since it prepares for this buttress plate 51, share-izing of a member and combination-ization are attained, while it is controlled that components mark increase to **, at the time of assembly, the subassembly of these member and switches can be first carried out to a buttress plate 51, and assembly nature is improved.

[0080] In addition, as mentioned above, although the 1st shift pin 21 will fit in with the engagement slot 68 of the block object 62 at the time of the actuation to D range from M range At this time, this 1st shift pin 21 is depressed to the Slots [3f and 3f] bottom like the time of the above-mentioned P and R range migration actuation, therefore lower part migration of the 2nd shift pin 30 is carried out till the place which interlocks and contacts the underside of 1st radii slot 46a.

[0081] Furthermore, as shown in drawing 5 , it sets to 1st radii slot 46a of the 2nd gate. The 46d of the 1st swelling sections caudad jutted out behind [direct] a D range location on the top face Moreover, since 2nd swelling section 46e jutted out up ahead of [direct] a D range location on the underside is formed, respectively, when carrying out back actuation of the shift lever 3 without pushing actuation of deregulation carbon button 3d from front N range The 46d of the above-mentioned 1st swelling sections contacts the 2nd shift pin 30 which is in contact with the top face of the 1st radii slot 46a concerned, and the effectiveness that a load once acts on back actuation of a shift lever 3 in a D range location is acquired. Moreover, when carrying out front actuation of the shift lever 3, carrying out pushing actuation of deregulation carbon button 3d from back M range, by the push down by that pushing actuation, the 2nd shift pin 30 contacts the underside of the 1st radii slot 46a concerned, this 2nd shift pin 30 and the above-mentioned 2nd swelling section 46e contact, and the effectiveness that a load once acts as well as front actuation of a shift lever 3 in a D range location is acquired.

[0082] Thereby, in case a shift lever 3 is operated without pushing actuation of deregulation carbon button 3d from front R range and front N range to back D range thru/or M range side,

first, a feeling of actuation of setting a cushion to actuation of this shift lever 3 in D range is obtained, and evocation and operation mistake prevention of caution of going into M mode exceeding D mode to an operator are achieved. Moreover, also in case front actuation of the shift lever 3 is carried out, carrying out pushing actuation of deregulation carbon button 3d from back M range, first, a feeling of actuation of setting a cushion to actuation of this shift lever 3 in D range will be obtained, and evocation and operation mistake prevention of caution of going into a center valve position exceeding D mode to an operator will be achieved.
[0083] In addition, since a load is only given to back actuation or front actuation of a shift lever 3 in these cases, when an operator wishs, the change to M mode from D mode or the change in a center valve position from D mode becomes respectively possible by front back-operating or operating a shift lever more strongly.
[0084] Furthermore, it considers as the taper side thru/or curved surface of free passage slot 46b which passes in case the 2nd shift pin 30 moves to back M range from D range, as similarly shown in drawing 5 where 46h of trailing-edge sections is loose. Even if back actuation is improved by vigor and a shift lever 3 contacts by this with an impact with the 2nd shift pin 30 strong against 46h of trailing-edge sections of this free passage slot 46b It compares, when this trailing-edge section is formed in the shape of a straight line, as the chain line in drawing showed. This 2nd shift pin 30 does not become complicated in the connection section of 1st radii slot 46a and free passage slot 46b, and the component of a force of the contact force turns into energization force to the direction of 2nd radii slot 46c to the 2nd shift pin 30, and it works. By this The 2nd shift pin 30 will be guided in 2nd radii slot 46c certainly and smoothly.
[0085] And the 1st gate which collaborates with the 1st shift pin 21 and regulates actuation between range in this way, And the 2nd gate which collaborates with the 2nd shift pin 30 and regulates actuation between gear change modes, The device for giving a cushion at a list to actuation of a shift lever 3 in D range as mentioned above, And since the actuation to M range thru/or the M mode of a shift lever 3 is prepared in all the devices certain-izing and for being carried out smoothly by the single guide plate 41, share-izing of a member and combination-ization are attained and buildup of components mark can be controlled compared with the case where it has these separately.
[0086] Moreover, although the configuration of 2nd radii slot 46c of the guide plate 41 which responds to the impact of the longitudinal slide movement of the shift lever 3 at the time of the manual gear change in M mode in contact with the both ends of the 2nd shift pin 30, respectively, and slot 51a of a buttress plate 51 was made almost the same in the above for example, when the base member 10 and a guide plate 41 are really fabricated by resin and a buttress plate 51 is created with the metal plate of high rigidity from this resin It is desirable to constitute so that slot 51a of a buttress plate 51 may be formed a little greatly and the 2nd shift pin 30 may contact previously 2nd radii slot 46c of a guide plate 41. It is because the collision sound of the metal buttress plate 51 and the shift pin 30 can be controlled. In addition, the buttress plate 51 as well as a guide plate 41 may the base member 10 and really be fabricated by resin, and since a metallic sound does not carry out at the time of the collision with the shift pin 30, you may make it the both ends of the shift pin 30 contact these in that case at abbreviation coincidence by making 2nd radii slot 46c and slot 51a into the shape of isomorphism.
[0087] Moreover, swelling shaping of the stopper members 69 and 70 of the order in the 2nd shift actuation regulation device may be carried out from the base member 10 at one, and

control of components mark is achieved.
[0088] In addition, although the above explained the automatic transmission which formed M range according to the individual, it cannot be overemphasized that this invention may be applied to the automatic transmission constituted so that not only this but M mode and D mode might both be attained possible [a change] in a predetermined range, for example, D range.
[0089] Next, based on drawing 8 , the gestalt of operation of the 2nd of this invention is explained. In addition, the same sign is used for the same component.
[0090] After contacting this movable block object 62 in the 2nd shift actuation regulation device at the time of the setback of the movable block object 62, the near stopper member 70 consists of gestalten of this 2nd operation possible [retreat].
[0091] That is, while the pin 201 which projects in this plate 51 side is formed in the field by the side of the buttress plate 51 in the backside [this] stopper member 70, to a buttress plate 51, the back low high long slot 202 is formed ahead, the above-mentioned pin 201 penetrates this long slot 202 like the above-mentioned slope 64 or the long slots 66 and 66 of the movable block object 62, and that point is stopped with the push nut 203. Therefore, like the movable block object 62, the next side stopper member 70 is movable in the range of this long slot 202 forward and backward, while the above-mentioned pin 201 and the long slot 202 show around. Moreover, according to it, the long slots 66 and 66 are back installed so that the setback may be above more possible also for the movable block object 62 than the case of the above-mentioned 1st operation gestalt.
[0092] And the backside stopper member 70 is ahead energized by the coil spring 204 interposed between buttress plates 51, it usually balances with the back energization force by the return spring 141 of the movable block object 62, and the engagement slot 148 of this block object 62 is located corresponding to the center valve position of M range, and the front face of the block object 62 is located corresponding to a D range location.
[0093] When according to such a configuration the block object 62 contacts in the condition of having balanced with the backside stopper member 70 and is in a back location Since the front face of this block object 62 was located in the D range location, where pushing actuation of a deregulation carbon button was performed and the 1st shift pin 21 is depressed Although that 1st shift pin 21 by which push-down actuation was carried out will contact the front face of this block object 62 as a drawing solid line shows and the shift actuation to back M range will receive regulation from D range when back actuation of the shift lever is carried out from P range When carrying out the back splash of the shift lever by the strong operating physical force further, an operator's wishing to have and meaning M range truly, and performing pushing actuation of the above-mentioned carbon button The movable block object 62 and the backside stopper member 70 resist the front energization force of a coil spring 204, and retreat, the above-mentioned shift actuation regulation is canceled, and actuation to M range from D range is realized.
[0094] Therefore, in case an operator is going to do back actuation of the shift lever from front P range and get M mode, a feeling of actuation which is said to the lever actuation as cushion **** in a D range location is obtained, and a nudge thru/or operation mistake prevention of the change to M from D is achieved. Moreover, since actuation can be continued with a deregulation carbon button pushed in, after once stopping back actuation of a shift lever by D range and canceling push-down actuation of the 1st shift pin 21, back actuation, then two steps of actuation which was said become unnecessary about a shift lever again

anew.
[0095]
[Effect of the Invention] When a shift lever is rocked by the car-body cross direction as mentioned above in the splash location where M mode is attained according to the 1st invention of this application, the splash is detected by the gear change signal generation means through the splash of the pin member with which this lever was equipped, a gear change signal is outputted according to the detection result, and manual gear change of M mode is realized.
[0096] In that case, while the above-mentioned gear change signal generation means is supported by the support means prepared in car-body flank material Since the contact section which the above-mentioned pin member is contacted [section] and makes this support means stop a shift lever, respectively in an above-mentioned shift up location and an above-mentioned down-shift location is prepared Even if it has the guide plate which collaborates with the above-mentioned pin member and regulates actuation between the splash locations of the plurality of a shift lever, to this guide plate The impact when responding to the splash of the shift lever at the time of the above-mentioned manual gear change actuation will not be added, but maintenance of the endurance of this guide plate and breakage prevention will be achieved by this.
[0097] Moreover, since the contact section which responds to the splash of the shift lever at the time of manual gear change actuation using the support means which supports the above-mentioned gear change signal generation means was prepared, it does not have a new member for preparing this contact section, and buildup of components mark can be controlled.
[0098] Furthermore, since it constituted so that a gear change signal generation means might be supported to a support means and the subassembly of the gear change signal generation means is previously carried out to this support means, by attaching this support means in car-body flank material, a gear change signal generation means can be attached to car-body flank material, and assembly increases the efficiency.
[0099] And when it has the guide plate separately especially according to the 2nd invention, the above-mentioned pin member is contacted at this guide plate as well as the contact section of the above-mentioned support means. Since the 2nd contact section which makes a shift up location and a down-shift location stop a shift lever, respectively is prepared, while the splash regulation in the shift up location and down-shift location of a shift lever becomes more certain The impact of manual gear change actuation of a shift lever will be distributed by these two contact sections, the impulse force which acts on a guide plate can weaken by this, and protection of this guide plate will be achieved.
[0100] According to the 3rd invention, especially furthermore, to a shift lever The 1st guide pin and 2nd guide pin which can be mutually displaced relatively are prepared. To a guide plate The 1st gate and 2nd gate which engage with each of these guide pins, respectively are prepared. When it has 2 sets of shift actuation devices, the configuration of the 2nd gate where the 2nd guide pin of these is engaged is materialized. Since the 2nd path order edge in which the 2nd guide pin is located is made into the 2nd contact section of a guide plate when a shift lever is in an M mode achievement location at this 2nd gate, this 2nd guide pin, A shift lever will be stopped by contact at the 2nd path order edge in the 2nd gate in a shift up location and a down-shift location.
[0101] On the other hand, since a 2nd mode detection means to detect that a shift lever is in the 2nd mode achievement location especially as well as the above-mentioned gear change

signal generation means is supported by the support means according to the 4th invention, this support means is utilized further by this, and buildup of components mark is controlled. Moreover, since the subassembly of this 2nd mode detection means can be first carried out to a support means, the increase in efficiency of assembly is also attained.

[0102] Moreover, according to the 5th invention, especially, a guide plate is constituted by resin shaping, and since it constituted so that a pin member might contact a guide plate ahead of a support means when a support means was the member which consisted of this resin with the metal of high intensity, a loud impulsive sound by the contact to a pin member and a metal support means is avoided.

[0103] And according to the 6th invention, since D mode achievement location and the M mode achievement location are prepared especially mutually independently, in the gear change actuation input unit of the automatic transmission with which additional arrangement of the M range was carried out in addition to D range, the same operation effectiveness as the 1st above-mentioned invention thru/or the 5th invention will be acquired.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the side elevation of the gear change actuation input unit concerning the gestalt of operation of this invention.

[Drawing 2] It is the top view of this equipment.

[Drawing 3] It is the amplification side elevation showing the important section of the shift lever in this equipment.

[Drawing 4] It is the top view showing the guide plate and the buttress plate circumference in this equipment.

[Drawing 5] It is the amplification side elevation of a guide plate which met the a-a line of drawing 4 .

[Drawing 6] It is the side elevation showing the structure of the buttress plate circumference.

[Drawing 7] It is the side elevation showing an operation of a movable block object.

[Drawing 8] It is the amplification side elevation showing the circumference structure of the movable block object in the gear change actuation input device concerning the gestalt of operation of the 2nd of this invention.

[Description of Notations]

1 Gear Change Actuation Input Unit
3 Shift Lever
3d Deregulation carbon button
10 Base Member
21 1st Shift Pin
30 2nd Shift Pin
41 Guide Plate
46 2nd Gate
46c The 2nd radii slot
51 Buttress Plate
52 M Mode Switch
53 Shift Up Switch
54 Down-Shift Switch
62 Movable Block Object

[Translation done.]